

## THE INSTRUCTORS

**Marjorie Lindsay Kimbrough** is a C-E-I-R consultant with seven years' experience in mathematical analysis and computer programming. Her background includes work with Lockheed-California and Burroughs Corporation. As a mathematical engineer with Lockheed-California she developed and programmed numerical methods for solution on the IBM 7090 of technical engineering problems in spacecraft, aerodynamics, operations, and research and development. As a systems representative with Burroughs she was responsible for all technical support at the Georgia Institute of Technology B5500 installation and, among her other assignments, was responsible for developing and teaching courses in ALGOL, FORTRAN, and COBOL. She is a graduate of the University of California at Berkeley, where she majored in mathematics and was a member of Phi Beta Kappa.

**Toby Riley** is a C-E-I-R senior consultant in program development who has more than ten years experience in the field of computer sciences. He has served as project director for such large-scale programs as Du Pont's RAMPS (8,500 FORTRAN statements) and the NASA Launch Vehicle Model. During his experience with both IBM and C-E-I-R, Riley has programmed on all the IBM 1400 and 7000 series computers, as well as several systems in the UNIVAC Scientific series, and Burroughs, GE, and RCA computers. Riley received his undergraduate degree from Swarthmore and has completed two years of graduate studies at the Case Institute of Technology.

**REGISTRATION:** Tuition, including luncheons and course materials, is \$195 for the first student and \$175 for others from the same organization. Checks for tuition should be made payable to C-E-I-R, Inc. The seminar is intended for a group of about thirty students. Classes begin at 9 a.m. and continue through 5 p.m. Hotel rooms are not included.

**HOTEL ACCOMMODATIONS:** The seminar is at the Marriott Motor Hotel on U.S. 1 near the Washington National Airport. A block of rooms at \$15 per night is being reserved by the hotel for student use. These will be held until two weeks prior to the seminar. Room reservation cards will be mailed with confirmation of your registration for the seminar.

**OTHER COURSES:** Among those currently scheduled are:

**MULTI-PROGRAMMED OPERATING SYSTEMS:** For multi-users and time-sharing. Washington, D.C., June 15-16-17.

**DATA COMMUNICATIONS:** A survey course for the man preparing for on line or real time processing. Washington, D.C., July 19-20-21.

**SYSTEM & PROGRAM DESIGN:** Emphasizes concepts of significant economic importance. Washington, D. C., July 25-26-27-28.

For information about these or other seminars in the C-E-I-R program, write:

Registrar  
Institute for Advanced Technology  
C-E-I-R<sup>INC</sup>  
1200 Jefferson Davis Highway  
Arlington, Virginia 22202  
Phone: Area Code 703/684-6377

# ALGOL for FORTRAN Programmers

A Three-Day Seminar  
July 6-7-8  
Marriott Motor Hotel  
Arlington, Virginia

This is a seminar for programmers with FORTRAN experience who are interested in the advantages that are often present through use of the ALGOL programming language. The basic assumption is that this programming professional will learn more, learn faster, and learn better by using the language than by hearing about it in lecture. To make this possible, the emphasis is on working sessions in which the student writes and runs ALGOL programs, using the C-E-I-R time sharing facility. The seminar will give this programmer a working knowledge of a language that is available on a surprising number of machines; the ability to take advantage of the efficiencies often possible through use of ALGOL, and an opportunity to evaluate the language in relation to others now available to him. Tuition, including luncheons and course materials, is \$195 for the first student and \$175 for others from the same organization.

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1200 Jefferson Davis Highway  
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# ALGOL FOR FORTRAN PROGRAMMERS

## Course Outline

### The ALGOL Language

#### Introduction and use

The bare essentials for using the Dartmouth ALGOL in the C-E-I-R time-sharing mode

#### The important similarities in:

The expanded character set, and syntax

Variables, constants, and arithmetic expressions

### The ALGOL Program

Program structures compared: declarations, statements, and blocks.

#### The case for more powerful control statements:

IF statements contrasted  
Switch declarations  
Labels

#### The handling of iterations

#### (switching from DO's to FOR's):

The more powerful FOR lists  
FOR statements and their variations

#### Arrays and subscripts contrasted

The more general array declarations  
Subscripting in ALGOL

#### Program segmentation:

#### procedures vs. subroutines

Subprograms

Formal and actual parameters

#### Input/Output Statements and data handling

#### The history of ALGOL as a guide to its development

#### The major advantages and disadvantages of ALGOL and FORTRAN compared

#### The practical issues of usefulness and appropriateness: efficiencies of coding, generated code, space and speed

#### ALGOL as a publication language

#### A critique of current ALGOL implementations

**C-E-I-R<sup>INC</sup>** is an international applied research and data processing corporation that offers analytical, scientific and computer services to business, science and government. Founded in 1954, it is today the world's largest, most experienced and best equipped independent organization in its field. The C-E-I-R professional staff includes several hundred mathematicians, statisticians, economists, operations researchers, management scientists and others from a variety of disciplines. In addition, many of the finest scientific and professional men in America are retained on a consultant basis. Augmenting this professional capability are modern electronic computing equipment, and skilled computer programmers and operations personnel at computing centers in five major U.S. cities, London, The Hague and Mexico City.



**IAT** is the latest expression of C-E-I-R's long-standing involvement in management education. The revolutionary nature of computer-based methods made education an integral part of C-E-I-R operations from the beginning. This relationship is formalized through the Institute for Advanced Technology. IAT faculty members are drawn primarily from the ranks of C-E-I-R's professional and computer operations staffs. Its curriculum is drawn from subjects in which C-E-I-R staff members are expert—recognized for excellence in day-to-day application of the art and science of computer usage to the real problems of C-E-I-R customers in business and industry. Sharing these new skills through seminars in major cities, management clinics, and special, in-plant training programs is the major goal of the Institute for Advanced Technology.



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## ALGOL FOR FORTRAN PROGRAMMERS

### A Three-Day Seminar

This is a seminar for programmers with FORTRAN experience who are interested in the advantages that are often present through use of the ALGOL programming language. The basic assumption is that this programming professional will learn more, learn faster, and learn better by using the language than by hearing about it in lecture. To make this possible, the emphasis is on workshop sessions in which the student writes and runs ALGOL programs, using the C-E-I-R time sharing facility. The seminar will give this programmer a working knowledge of a language that is available on a surprising number of machines; the ability to take advantage of the efficiencies often possible through use of ALGOL, and an opportunity to evaluate the language in relation to others now available to him. Tuition, including luncheons and course material, is \$195 for the first student and \$175 for others from the same organization.

**Marriott Motor Hotel  
Arlington, Virginia  
July 6-7-8**

## Register me for ALGOL FOR FORTRAN PROGRAMMERS

NAME: \_\_\_\_\_

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A DO-IT-YOURSELF

APPROACH TO LEARNING

ALGOL PROGRAMMING

Dear Sir:

This is a seminar for programmers--specifically, programmers with experience in FORTRAN. The subject of the three-day course is the ALGOL language, and some may be surprised to find that:

- There are more computers around with ALGOL capability than you'd think. . . and even more on the way, and
- Our approach to teaching this language involves extensive student use of C-E-I-R's time-sharing system.

The programmer who asks "I know FORTRAN, so why bother with ALGOL?" is like the motorist who lives in Montreal and figures he can get along without snow tires or chains. He may be right--more than half of the time.

The man we're after with this seminar is the programming professional who wants to master ALGOL not just so that he can read algorithms in technical publications, but because he recognizes ALGOL as a language that will prove useful to him with certain types of problems he encounters in the daily practice of his craft.

This man just might not be aware of the growing number of computers for which ALGOL compilers are available. The list below gives an indication of the current situation:

## MANUFACTURER

## MODEL

GE	235, 645
IBM	7070, 7090, 360/40
SDS	925, 930, 950
Burroughs	205, 220, B5500
CDC	1604, 3600, 3800, 6600
UNIVAC	1105, 1107/8, UNIVAC III
RCA	601 and licencees: Siemens, Hitachi and English Electric
DEC	PDP-1

Not listed above are literally dozens of overseas computers with ALGOL compilers. ALGOL is not just an international computing language; it is the most commonly used computer language in Europe, Japan, and elsewhere. As such, it's a handy thing to know for the data processing man who works in an international organization.

The approach we take, in the "ALGOL for FORTRAN Programmers" seminar is based on the belief that an experienced FORTRAN programmer will learn more, learn better, and learn faster by USING the ALGOL language than he will in a lecture room. That's why we've moved the classroom as close as possible to our computer center in Arlington (across the river from Washington, D. C.)


Lectures will take up about one third of the three-day seminar. Two-thirds will be devoted to workshop sessions in which each student will program, debug, and run his programs, using consoles linked to C-E-I-R's time-sharing system. (It employs Teletype input via phone lines to our GE235/Datanet 30 installation).

The seminar concludes with a review of ALGOL's development; major advantages and disadvantages of ALGOL and FORTRAN, and consideration of the practical issues of usefulness and appropriateness.

About six terminals will be available for student use to assure everybody ample console time. We've tried this "learn-by-doing" approach in another programming seminar, and it works. This time, with several more consoles for student use, we're confident that it will work even better.

Attendance at this seminar, given July 6, 7, 8 at the Marriott Motor Hotel and C-E-I-R's Arlington, Virginia, computer center, will be limited to a class of about thirty. Additional sessions may be scheduled later on. To be sure you are among those present and accounted for at this interesting and productive session, mail or phone your registration today.

Sincerely,

A handwritten signature in dark ink, appearing to read "Robert D. Nixon", written in a cursive style.

Robert D. Nixon  
Director of Curriculum